

NORTH  
COAST  
AMATEUR  
RADIO  
CLUB

Mailing Address

North Coast A.R.C.

P. O. Box 30529

Cleveland, Oh 44130

Pres. Rick K8SCI, V. Pres. Bob K8TTZ, Sec. Dave N8ETY, Treas. Glenn WD8OMW

NORTH COAST COMMUNICATOR - JAN/FEB 1985

#### NORTH COAST GENERAL MEETING NOTICE

A GENERAL MEETING WILL BE HELD FEBRUARY 7, 1985 AT 7:30 PM AT THE NORTH OLMSTED BRANCH OF THE CUYAHOGA PUBLIC LIBRARY. SEE ENCLOSED MAP

NORTH COAST HAS ARRANGED FOR ADDITIONAL TIME FOR OUR MEETINGS, 9:30 PM

THE NEXT THREE NORTH COAST MEETINGS WILL BE ON THE FIRST THURSDAY OF FEBRUARY, APRIL, AND JUNE. (FEB 07, APR 04, AND JUN 06)

COFFEE, DONUTS, 50/50 RAFFLE, DOOR PRIZES, EVERYONE WELCOMED, C U THERE

#### SCOUT EXPO 85 AT GREAT NORTHERN MALL

WHEN: SATURDAY FEB 9, 1985

WHERE: GREAT NORTHERN SHOPPING MALL, NORTH OLMSTED, OHIO

TIME: 9:00 AM TO 9:00 PM

A GREAT OPPORTUNITY FOR AMATEUR RADIO TO BE INTRODUCED AND DEMONSTRATED TO MANY SCOUTS, AS WELL AS TO THE PUBLIC.

THIS EXPO CELEBRATES THE END OF THE SCOUTING ANNIVERSARY WEEK.

YOU CAN HELP IN THIS BY DONATING SOME OF YOUR TIME OR OFFERING SOME OF YOUR EQUIPMENT FOR DISPLAY AND/OR OPERATION AT THIS EXPO. YOUR HELP IF AT ALL POSSIBLE IS NEEDED TO MAKE THIS A SUCCESSFUL EVENT.

SOME OF THE AREAS OF AMATEUR RADIO THAT MAY BE SET UP ARE:

1. 2 METER FM OPERATIONS (THRU OUR 145.290 REPEATER)
2. AMATEUR RADIO SPACE COMMUNICATIONS (OSCAR 10 MODEL)
3. HF RECEIVER FOR DX SSB RECEPTION
4. RTTY OPERATION
5. PUBLIC SERVICE ACTIVITIES

PLEASE CONTACT LIN SHAW, WD8SDP AT 235-3912 WHO IS HEADING UP THIS OPERATION. ON WEEKDAYS BETWEEN 4:00 PM AND 7:00 PM, OR WEEKENDS.

LET'S ALL GET INVOLVED WITH BRINGING MORE INTEREST OF AMATEUR RADIO TO THE SCOUTS (AND THE PUBLIC). THE AMATEUR RADIO POPULATION IS DROPPING AT THE RATE OF 200 PER MONTH AND WE CANNOT AFFORD TO LET THIS CONTINUE.

**CITY OF NORTH OLMSTED**

POLICE DEPARTMENT 216/777-3535  
27243 LORAIN ROAD  
NORTH OLMSTED, OHIO 44070



January 24, 1985

~~MARION R. TAYLOR~~  
Acting Chief of Police  
Captain T. Marsh

NCARC Club  
C/O Richard Wells  
5955 Burns Road  
North Olmsted, Ohio 44070

Dear Mr. Wells:

The North Olmsted Police Department would like to express its' appreciation to the NCARC Club for the assistance it gave to a crime victim and our department on January 14, 1985.

The victim of an attempted auto theft received help from Mr. Ronald Leeseberg and your NCARC Club via an amateur radio telephone link to our department.

This enabled the victim to make quick contact with the police and supply suspect information. As a result two suspects were arrested and charged.

Again, thank you for your help and for becoming involved.

Sincerely,

*T. Marsh*  
Captain T. Marsh  
Acting Chief of Police

TAM:nel



DONATIONS OF OLD RADIO EQUIPMENT TO HELP A GOOD CAUSE

AL KORAN'S SHRINE RADIO UNIT IS LOOKING FOR DONATIONS OF OLD RADIO EQUIPMENT WHICH WILL BE SOLD AT VARIOUS TIMES AND PLACES THROUGHOUT THE YEAR.

ALL PROCEEDS GO TO THE SHRINE'S CRIPPLED AND BURNED CHILDRENS HOSPITALS.

IF YOU HAVE ANYTHING TO DONATE, A MEMBER OF THE SHRINE RADIO UNIT WILL PICK IT UP.

CONTACT THE FOLLOWING: PAUL CORNELL, W8EFW AT 442-7024, OR  
CLIFF BADE, W8CJB AT 398-6500 (WEEKDAYS)

THIS IS A GOOD WAY TO GET RID OF YOUR OLD BOAT ANCHORS, AND HELP OUT IN AN EXCELLENT CAUSE AS WELL, PLEASE CALL IF YOU CAN HELP..

FEDERAL COMMUNICATIONS COMMISSION DETROIT HAS A NEW ADDRESS

24897 HATHAWAY ST., FARMINGTON HILLS, MICH 48018-1398

PHONE: 313-226-6078

IF YOU NEED A FORM 610, YOU CAN CONTACT THE FEDERAL INFORMATION OFFICE HERE IN CLEVELAND AT 522-4040 AND THEY WILL MAIL ONE TO YOU.

YOU MUST USE A FCC FORM 610 DATED JUNE 1984 (OR NEWER) 610'S DATED PRIOR TO THAT DATE ARE NO LONGER BEING ACCEPTED.

OHIO AMATEUR RADIO CALL SIGN AUTO LICENSE TAGS

FOR INFORMATION, YOU CAN TELEPHONE: AREA CODE 614 863-7800

MAIL: STATE OF OHIO, BUREAU OF MOTOR VEHICLES  
P O BOX 16521, COLUMBUS, OHIO 43216-6521

NEEDS: A WRITTEN REQUEST SHOULD BE MADE 120 DAYS PRIOR TO YOUR CURRENT LICENSE TAG EXPIRATION AND INCLUDE A COPY OF YOUR HAM LICENSE.

OHIO AREA REPEATER COUNCIL, INC

FOR THOSE INDIVIDUALS WHO ARE SEEKING MORE INFORMATION CONCERNING OHIO'S REPEATER FREQUENCY COORDINATION BODY, WRITE TO:

CLIFF DICE, KC8DF (SECRETARY)  
1375 CANAAN TWP RD 67, EDISON, OH 43320  
TELEPHONE: (419) 845-2745

THE NEXT OHIO AREA REPEATER COUNCIL MEETING IS APRIL 13, 85 AT 9:30 AM IN COLUMBUS, OH (LOCATION NOT YET ANNOUNCED). TALK-IN 146.76 OR 147.24. OARC MEETS QUARTERLY IN THE COLUMBUS, OHIO AREA (CENTRALLY LOCATED)



## THE CLEVELAND HAMFEST ASSOCIATION

THE CLEVELAND HAMFEST ASSOCIATION (C.H.A.) IS MADE UP OF 7 DIRECTORS WHO ARE ELECTED BY MEMBERS OF THE C.H.A.. MEMBERS OF THE C.H.A. ARE INDIVIDUALS INTERESTED IN MAKING THE SEPTEMBER CLEVELAND HAMFEST AS SUCCESSFUL AS POSSIBLE EACH YEAR. ANYONE WHO HAS INTEREST IN BECOMING AN ACTIVE PART OF THE C.H.A. IS WELCOME TO ATTEND THE GENERAL MEETINGS.

TERMS OF DIRECTORS ARE: 2 FOR 3 YEARS, 2 FOR 2 YEARS, AND 3 FOR 1 YEAR.

THE LAST C.H.A. MEETING WAS HELD JAN 15, 1985 AT DENNY'S (W 150/I-71).

DURING THIS MEETING, THE FOLLOWING INDIVIDUALS WERE ELECTED TO THE BOARD OF DIRECTORS OF THE C.H.A. TO FILL EXPIRED DIRECTOR TERMS:

TOM CHANEY, N8DBL FOR A TWO YEAR PERIOD  
RICK WELLS, K8SCI FOR A TWO YEAR PERIOD  
BILL TISZA, W8CZW FOR A ONE YEAR PERIOD  
ED STEVENS, WB8ROK FOR A ONE YEAR PERIOD  
DON RITCHIE, K8ZGW FOR A ONE YEAR PERIOD

IN ADDITION, THE FOLLOWING OFFICER POSITIONS WERE DECIDED BY ELECTION:

VICE PRES: RICK WELLS, K8SCI  
TREASURER: BILL TISZA, W8CZW  
SECRETARY: ED STEVENS, WB8ROK

THE OTHER TWO DIRECTORS ARE:

PRESIDENT: JOHN BADDOUR, KC8KI  
AND: JOHN PAUL JONES, WA8CAE

AT THIS MEETING, IT WAS AGREED THAT THE 1985 CLEVELAND HAMFEST WILL BE AGAIN HELD AT THE CUYAHOGA COUNTY FAIRGROUNDS (BEREA) WITH A TARGET DATE OF SEPTEMBER 22ND.

IF YOU ARE INTERESTED IN GETTING INVOLVED WITH THE MAKING OF THE 1985 CLEVELAND HAMFEST, PLEASE ATTEND THE NEXT C.H.A. MEETING WHICH WILL BE HELD ON FEB 19TH AT 7:30 PM. (6:30 PM FOR THOSE INTERESTED IN EATING)

THE BOARD MEETINGS FOLLOW THE CLOSE OF THE GENERAL MEETING.

THE CLEVELAND HAMFEST ASSOCIATION IS ACTIVE IN LOOKING FOR INDIVIDUALS WHO WISH THE CLEVELAND HAMFEST TO BE BETTER, AND BETTER, AND BETTER.

## N.C.A.R.C. 1984 SURVEY RESULTS

THANKS TO ALL WHO PARTICIPATED IN THE NCARC SURVEY '84, BY TURNING IN THEIR SURVEY SHEETS. WE RECEIVED A 34 PERCENT MEMBERSHIP RESPONSE. LISTED ARE THE QUESTIONS ALONG WITH THE PERCENTAGES, BASED ON THE TOTAL NUMBER OF SURVEYS RECEIVED. THE TOTAL PERCENTAGES ON EACH QUESTION MAY ADD UP TO MORE THAN 100 PERCENT, DUE TO MORE THAN ONE ANSWER WAS MARKED ON SOME QUESTIONS. I SINCERELY HOPE THIS SURVEY DATA WILL HELP THE MEMBERSHIP IN THEIR DECISION MAKING EFFORTS. THANKS AGAIN AND 73'S.

TOM, KV8M



\*\*\*\*\* SURVEY '84 RESULTS \*\*\*\*\*

Number of years licensed?

8% 1 year or less

32% 1-5 years

20% 6-10 years

4% 11-20 years

36% 21 years and up

How many Hrs a week do you  
devote to amateur radio?

4% 0-1 Hr

24% 2-5 Hrs

32% 6-10 Hrs

20% 11-20 Hrs

20% 21 Hrs and up

Which bands do you use  
the most?

32% 160-40 Meters

8% 30-10 Meters

0% 6 Meters

98% 2 Meters

8% 220 MHz and up

Which mode do you use most?

32% SSB

20% CW

76% FM

4% RTTY

4% Other

What do you think of our  
weekly code practice?

52% Great

12% Good

12% Okay

0% Don't like

32% Don't listen

What do you think of the  
NCARC newsletter?

48% Great

40% Good

12% Okay

0% Don't read

Do you like to build your  
own equipment?

48% YES

44% NO

8% No answer

Do you own a home computer?

70% YES

30% NO

Have you ever used a P.C. in  
connection with amateur radio?

36% YES

60% NO

4% No answer

What do you think of  
contesting?

16% Great

16% Good

60% Okay

8% Don't like it

4% Can't stand it

How many hours per week do  
you listen to the NCARC  
repeater?

24% 0-3 Hrs

40% 4-8 Hrs

12% 9-15 Hrs

4% 16-24 Hrs

16% 25 Hrs and up

4% No answer

Would you approve of open auto  
patch on the club repeater?

24% YES

72% NO

4% No answer

When is the best time for you  
to attend NCARC meetings?

64% Weeknights

12% Saturday afternoon

16% Sunday afternoon

8% No answer

What do you think of field day?

40% Great

28% Good

28% Okay

4% Don't like

What do you think of DXing?

32% Great

24% Good

40% Okay

4% Don't like it

0% Despise it



Minutes from Dec. 1984  
General Membership meeting North Coast

The meeting was called to order at 7:42 p.m. By Rick K8SCI  
22 members and guests attended.  
Officers were introduced, the minutes were passed as printed in  
newsletter. The treasurers report was also approved as read.  
Old Business... Shirley KA8Y 1985 Field Day Chairperson informed the  
group that the site for "85" Field Day had been found and secured.  
The site is in Berlin Hts, Ohio (45 min. west of Cleveland) Very  
shortly, the F.D. committee will be checking this site for any possible  
problems,(noise etc). More info. as we get closer.

New Business... Rick K8SCI gave an overview of where the clubs money  
goes, i.e. phone bills, printing expenses, mailing costs and the like.  
General discussion followed regarding the aspects of the treasury.  
Dave N8ETY informed the group that possibly a page of local advertisement  
would be started to help offset some of the newsletter expenses.  
Rick then explained that the Board of Directors had been discussing  
the idea that the club become a "Non'Profit" Organization, and if anyone  
knew an Attorney that could help us at little or no expense to let  
Rick know. Charlie N8BO mentioned some of the items needed to become a  
N-P-O.

Rick then spoke about the clubs involvement in the Boy Scouts at the  
Great Northern Mall Feb. 9. 1985 . Lyn Shaw WD8SHP has been setting up  
a Ham Station in the past, and this year asked if North Coast would  
like to assist, and of course we do. We will be setting up an HF,  
2mtr.and hopefully a RTTY and possibly an OSCAR 10 Gateway.

Moving on, a discussion regarding the number of meetings per year that  
the club now holds, are they enough? Most people felt that we were  
OK at 6 per year.

KROJ was designated as Program Chairperson, and then proceeded to  
show the new AMERITRON 1500W Linear. Dave N8ETY spoke briefly regarding  
AMSAT and its membership drive, also that the Gateway Station to  
OSCAR 10 is temporarily suspended due to operating mode and time changes.  
The drawings were held... KROJ won the Door Prize and Bill KA8CKZ  
won the 50/50 Drawing.

With no other business to be conducted, the meeting was adjourned, and  
many eyeball QSO's took place until our time for the room had expired.

de N8ETY



## TRI-COUNTY INTERFERENCE COMMITTEE FORMING !!!

At one time or another, we all have been plagued by interference, whether accidental or intentional. Some have said, "It's not that bad here". Do you believe that statement? Do we want to end up like Southern California, or worse? **Intentional interference must be stopped, Now!**

We could lose phone patch privileges, spectrum or simply be unable to have a friendly QSO. The FCC is understaffed now, and with more cuts to come, it is up to **us** to **stop malicious interference in our Amateur Radio Service!**

The Cuyahoga County Malicious Interference Committee is off and running. Lorain and Lake Counties Committee's are about to take flight and hopefully Medina and Summit Counties will soon follow.

In Cuyahoga County a small group of concerned hams from several area clubs are preparing to deal with the villians, and we still need concerned hams to help us in the following areas:

(A) PRIMARY & SECONDARY COUNTY COORDINATORS:

Persons interested in becoming county coordinators should be able to communicate with other county coordinators when neccessary, should have an extra phone line or call waiting, Beam and Omni Antennas and extra radio gear.

(B) BASE STATIONS:

Persons interested in using Calibrated Beam or Direction Finding Equipment would report headings and other information such as signal, time and any background sounds, etc.

(C) MOBILE STATIONS:

Persons interested would work mobile at the request of the county coordinator.

(D) GENERAL COMMITTEE:

Persons interested would listen to input frequency (in the case of repeater jamming) and report signal, time and any background sounds, etc.  
(Members of all the other committees would automatically take part in this committee.)

(E) TECHNICAL COMMITTEE:

Persons interested would help design, build and maintain D.F. equipment. This committee would also help calibrate beam antennas for the base stations.

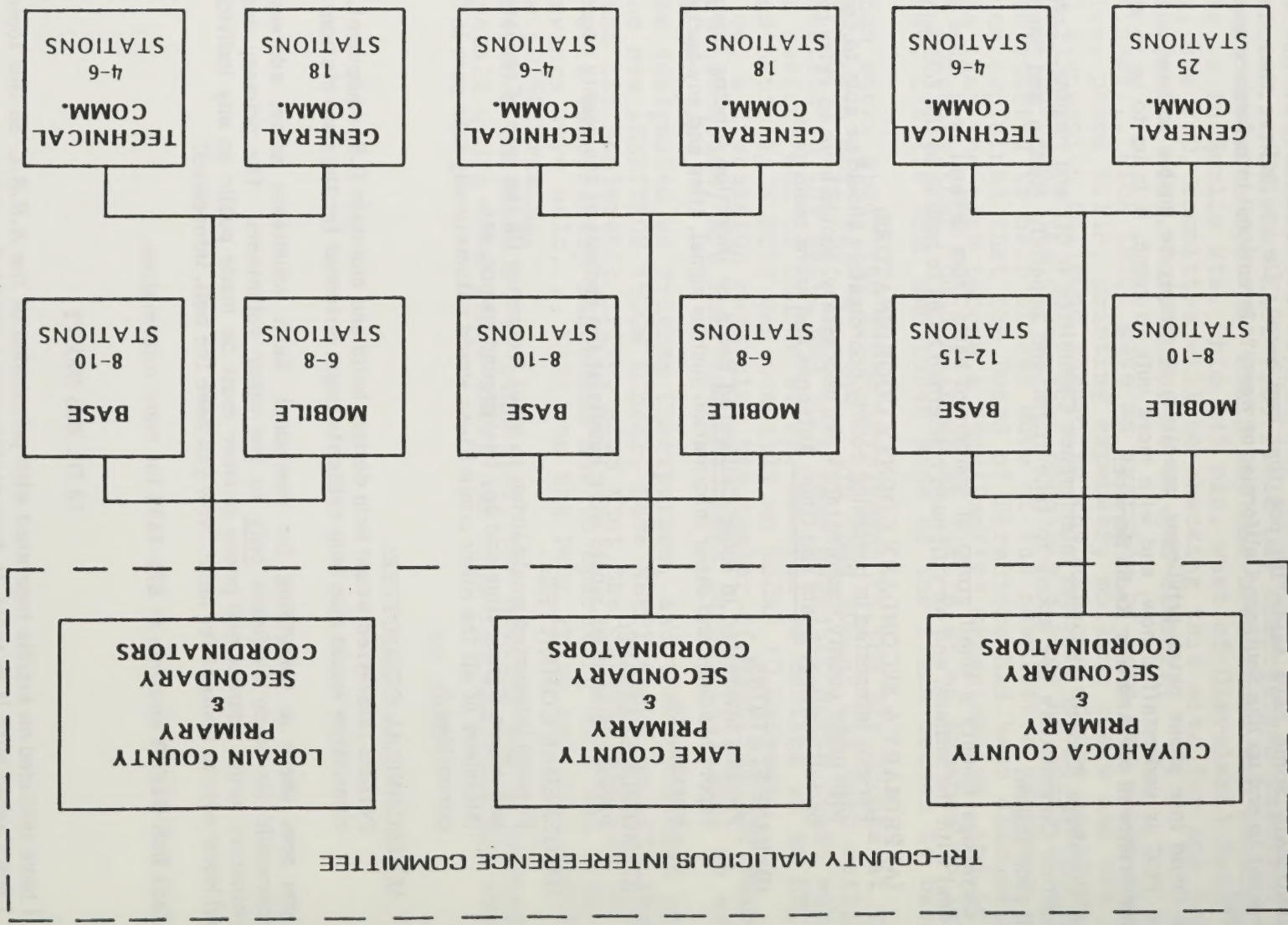
**So you see, there is something for everyone!** Each volunteers name, address and phone number would be made available only to the other volunteers. The primary and secondary coordinators name address and phone number must be made public so any individual or club would know who to contact for help! Now you have the ball, interested?

Contact **Bob N8FKT** anytime at **671-3825** for more information.

73 DE Bob N8FKT

P.S. I have included an article reprinted with permission of the A.R.R.L. on this topic. Although I don't agree with it in total, it does contain some good information.







# ZAP Your Repeater Interference with the Zero Antenna Patrol

By Albert W. Hamilton,\* AG1F

*All responsible Amateur Radio operators want to preserve proper on-the-air conduct. A vital force in support of this goal is the ARRL Local Interference Committee, a key component of the Amateur Auxiliary to the FCC's Field Operations Bureau (see Aug. 1984 QST, p. 11). The following article describes the approach the North Shore Repeater Association (Salem, Massachusetts) uses to control interference on its repeaters. It was developed by Jim Morris, KIUGM, and NSRA. Local Interference Committees should find this approach helpful.*

We should use the strengths of Amateur Radio to keep our bands clean. Two of our greatest strengths are that we tend to spread out over a large area, rather than congregate, and at the same time have good local communication. This means someone is always close to any illegal transmission that may occur.

The ZAP (Zero Antenna Patrol) approach is both simple and effective.

1) Listen to the interfering station and note the signal strength and direction. Signal strength may be measured on a meter, with an attenuator or just noted as being "full quieting" or "noisy." If you can get a true bearing, do so. Even a general direction is helpful (if reported as such). Since you may not always be sure of the accuracy of your indicator, it is possible to rotate the antenna to a local repeater and measure the difference in reading. You then report the bearing as so many degrees north (east, south or west) of the repeater.

2) Remove your antenna and note signal strength.

3) Report your location, time and date of the interference and the station being interfered with, along with strength and direction. Report even if you don't hear the interfering station, and this will tell where the station isn't.

A typical report might be: "KIWET signal weak on beam from Wilmington, bearing 30° north of the Salem Repeater." A station that couldn't hear the interference might report: "ZAP zero Middleton." (Reporting that you cannot hear the interfering station may be the most impor-

tant of all the information available.)

These three steps will very quickly place the interfering station (or stations) within a small area (5-mile-or-smaller radius). One can now move in with mobiles and direction finders and pinpoint the exact location. The ZAP information may be collected over a long period to locate and identify a station that only comes on briefly to interfere and then goes away.

## Requirements for Effective Zapping

To be effective in locating transmitters one needs:

1) Hunt coordinators who can take the reports and plot them on a proper size map. You may also need to direct mobiles who do not have proper maps with them, or who may be too busy to do everything.

2) Training sessions for the base stations to get them used to reporting, particularly negative information. Keep in mind that

a) ZAP reporting is easy and effective once you get everybody trained.

b) Cooperative hunts coordinated with base stations develop a cooperative spirit and get people used to working and communicating together.

c) Individual competitive hunts are also useful. The wrapup of a successful hunt (and not all are successful) involves some individual actually being on the spot, so individual skills must be developed as well.

3) Reporting of the information gathered to keep everybody working together. This includes:

a) Over a repeater. Over the one being interfered with, or over a separate repeater.

b) On a direct frequency. This is very useful, but may make coordination difficult (unless the base has very good coverage). Coordination may be particularly difficult in hilly terrain, where the mobiles may not be able to work until they get within 5 miles of each other.

c) By phone. In our area, we maintain an automatic answering device that can be called, and a message left. The information becomes part of the long-term database. Sensitive information may be passed by landline.

4) Hunters

a) Fixed stations can be useful with or without directional capability. The more ZAP reports you get, the more precise your circle becomes.

b) Mobile units will eventually get to

the area and, if fortunate, the interfering station will transmit as the mobile unit passes the location of the interfering station. (This is one of the more common ways of pinpointing the exact location.)

c) SWLs can be very important and should be given a phone number where they can report in. We may have 50 or more people in the area with their scanners tuned to the repeater.

5) Reporters

a) Hams, of course, can report in directly (if they have the proper license), and the hunters are reporters as well.

b) Again, SWLs can be very important and should be given a phone number where they can report in. Once informed that you would like them also to monitor the input frequency and report, they become a very valuable resource.

To get the most cooperation from hams and SWLs you need a lot of publicity and an open invitation to everyone in the area to participate. This may also act as a deterrent to anyone considering interfering with the repeater.

You don't want to chase the interfering party to another repeater, so you should be prepared to help train the other repeater groups in the area, or even provide them with some help. We pursue an active educational program by traveling to various sites in both Massachusetts and New Hampshire to discuss the ZAP technique and demonstrate the equipment.

## Bear by the Tail: What to Do

Once the offender is located, you have to decide what action to take.

1) Accidental transmissions. In this case, it is usually safe and sufficient to notify the ham, who will be happy to correct the problem.

2) Occasional intermittent transmissions. It is essential that the Local Interference Committee have absolute verification of who the offending party is. The Local Interference Committee Chairman can then send a letter to that party requesting that he cease and desist. This should be sufficient to cure the problem.

3) Serious deliberate interference or use of foul language. Again, this must be absolutely verified by the Local Interference Committee using the ZAP technique. In these serious cases, the Local Interference Committee may require the assistance of the ARRL OO/RFI Coordinator and the

\*President, North Shore Repeater Assn.,  
54 Hathaway Ave., Beverly, MA 01915



ARRL Regional Monitoring Station. Caution must be used here; assume that this person could be dangerous.

*Be careful to take only legal steps and avoid anything that could be construed as libelous or threatening.*

Since the ZAP technique is widely known in our local amateur community, our goal has been to deter any deliberate interference through a general recognition that the parties involved will be revealed. This will not always be sufficient, so one must be prepared to carry a given situation to its end. Here are two recent examples of our ZAP group being actually deployed.

One Saturday morning, a carrier came on and timed out the repeater. Our primary DF site had a bearing into an area of hills and reflections to the southwest. We received reports from several base stations that localized the area and identified it as fixed and not mobile. We eventually had about eight mobiles move into the area. The signal went mobile, then stationary, then mobile and finally stationary again at the original bearing. Shortly after this it was located at the home of a local ham. The mic switch was shorted out. This took a total of 45 minutes, and we had brought some mobiles from as far away as 15 miles to within 2 miles.

At the end, we had five or six hams within 2 miles of the site. We also got reports from an SWL to the published interference phone. We had about 20 participants actively working with us in just this 45-minute period.

The other example is completely different — deliberate interference that developed into a pattern of harassment of certain individuals on another repeater. The primary DF unit was again looking into an area where the readings were known to be low. Other bearings isolated the area, and the ZAP technique further isolated it. The possibility still existed that there were up to three stations working together or independently.

The victims would stand by until the hunters were in position and then become active. The harassment would continue for two to three hours at a time, and consisted of short transmissions and then a break to be sure the intended victim was still transmitting. The final clincher came when a transmission was made while a car was driving past the house. This took a week of solid work involving over 50 hams and 2000 miles of driving. The final verification was by three hams with hand-held RDF units with cross bearings from less than 200 feet.

A search of call books and repeater and club rosters gave us a call sign, name and phone number, and an observation gave us a car license number. Since the house is not a one-family dwelling, there was no positive identification. A ham with a Novice license (according to a call book) did reside at that location, and the roof was covered with antennas. Note that with the establishment

### Recommended Equipment for Zapping

History has been made of hand-held, fixed and mobile RDF equipment.

1. **Base RDF** — three units, Doppler type, located about 15 to 20 miles apart. These were locally built, based on all the published articles. The reason for this was to support marine RDF applications; therefore, two of these units are located on the coast. The third unit is at the home of W1MCK, who designed all three. The installation at W1MCK uses a dual beam to give better control over reflections. This unit is normally used on the VHF marine band, but works also on the 2-meter band. The receiver is a scanner, making multiband coverage easy.

2. **We have two commercial Doppler systems presently.** We are modifying one to see if we can use it at the repeater site. The other is used mobile and is reasonably effective if sufficient transmissions are made. The averaging effect when you are moving allows you to drive in the general direction of the station even when you are in an area of bad reflections.

3. **Beams** — half a dozen that can give reliable bearings; unfortunately, several lie in a straight line with one of the RDF units. A high-gain vertical enables you to listen in all directions and know when the interference is still there. You can run this off of a separate receiver, ideally, or use a coax switch.

4. **Base stations** — about 100, to give occasional reports.

5. **Mobiles** — about 100. These might be driving past at the time of a transmission and get readings with and without the antenna. These can also become active hunters.

6. **Hand-helds** — about 100, about similar to the mobile units. They can be anywhere.

7. **Hand-held RDF** — six or more units of the Doppler type, which are excellent for close-in work. The hand-held units with the larger elements are the most sensitive. Since these work on phasing and produce a null in the tone, one can use these on any rig without modification.

8. **Hand-held tapes** — several of these. Are not good once you get close, however.

9. **Alternators** — necessary for use with any device that works on signal strength. They also give you the ability to record a signal strength for later comparison. We really need a source of good units.

10. **Maps** — Important tool for plotting and for finding your way into an area that you desire to search. Topographical maps, small-area road maps and large area maps are all needed. Some of the larger maps will have to be kept at the base stations, and information passed out as needed. It is helpful if you can standardize on a common set of maps for the group. Some of the maps may not be so easy; they may be squeezed in one or more directions to make the paper size convenient for the printer. In fact, there may be the only ones with all the street names.

11. **Compasses** — necessary for reporting bearings from hand-held units, and for knowing in what direction you are going.

of the League's Amateur Auxiliary program the next step would be the initiation of mediation resolution efforts by the Local Interference Committee Chairman, OO/RFI Coordinator and possibly the Regional Monitoring Station. FCC field personnel are contacted *only* if the Local Interference Committee has signed a cooperative agreement with the local FCC engineer-in-charge or an FCC monitoring station.

The only action taken was to notify the FCC and offer to assist them. Meanwhile, we spread word that the transmissions were coming from a certain area. The problem was reduced considerably, and is being watched to see if it recurs.

### Maintaining ZAP Proficiency

We hold a practice session monthly in which the repeater is shut down for five minutes and a hidden station transmits on the output frequency. All stations then check in via the repeater, the data is correlated, and the most probable position or positions are reported back over the repeater. The hidden transmitter then reports his location. This immediate feedback is very useful, particularly to those stations reporting as not having heard the hidden transmitter. This is very important, and we first tell the location based on the negative reports. This encourages these reports. We then report the location based on the positive and negative reports combined, based on signal strength only. Next, we add all directional information. It is not unusual to have to discard some of the directional information because of incorrect readings or technique.

We also hold practice sessions in which a mobile hides and transmits on a direct frequency. (Our rules for this kind of practice are that the mobile stays within a certain area, basically the towns that border Salem, and parks on a public street. The mobile generally transmits on request only.) The hunters work cooperatively with base stations that have DF capability or can help locate the transmitter by ZAP. The base control then vectors the mobiles into the correct area. The mobiles work competitively when they get in close.

### Summary

Decide what you wish to accomplish in your area, preferably with the input and cooperation of several radio clubs that cover a large geographical area (interference may be low power from another state). Once you know what your goals are, and you have formed your group, apply to your ARRL Section Manager (p. 8, this issue) to become an official League-sanctioned Local Interference Committee. Then your group can begin the important work toward maintaining a comfortable operating environment. It may be too late to start practicing *after* the interference disrupts your repeater.

Simple equipment that you are already trained to use will be sufficient for most tasks (see sidebar). More sophisticated equipment that you have practiced with under good conditions may make your task even easier. One hundred people working together with simple equipment is better than one person working alone with the best equipment. Good hunting, and good ZAPPING!



## RESONANT CIRCUITS

This is the third in a series of articles on Resonant Circuits. All articles are excerpts from the book "R F Circuit Design", written by a fellow ham, Chris Bowick (WD4C). The book is published by Howard Sams & Co. Verbal permission has been given for reprints.

### Loaded-Q

The Q of a resonant circuit was defined earlier to be equal to the ratio of the circuit's center frequency to its 3 dB bandwidth. This "Circuit Q," as it was called, is often given the label "loaded-Q" because it describes the passband characteristics of the resonant circuit under actual in-circuit or loaded conditions. The loaded-Q of a resonant circuit is dependent upon three main factors (see fig. 8): (1) the source resistance ( $R_s$ ), (2) the load resistance ( $R_L$ ), and (3) the component Q.

### Effect of $R_s$ and $R_L$ on loaded Q

The role that source and load impedances play in determining the loaded Q of a resonant circuit is probably best illustrated through an example. In fig. 7 we plotted a resonance curve for a circuit consisting of a 50-ohm source, a 0.05  $\mu$ H lossless inductor, and a 25pF lossless capacitor. The loaded Q of this circuit, as defined by eq. 1 and determined from the graph, is approximately 1.1. Obviously, this is not a very narrow band or high-Q design. However, after replacing the 50 ohm source with a 1000 ohm source and again plotting the results, the response in fig. 9 is applicable. (The resonance curve for the circuit with the 50 ohm source is shown in dashed lines for comparison. Notice that the Q, or selectivity of the resonant circuit, has increased dramatically to approximately 22. Thus, by raising the source impedance, we have increased the Q of our resonant circuit.

However, neither of these plots addresses the effect of the load impedance on the resonance curve. If an external load were attached to the resonant circuit, as shown in fig. 10A, the effect



would be to broaden or "de-Q" the response curve, depending upon the value of the load resistance. The equivalent circuit is shown in fig. 10B. The resonant circuit sees an equivalent resistance of  $R_S$  in parallel with  $R_L$  as its true load. Because this total external resistance is, by definition, smaller in value than either  $R_S$  or  $R_L$ , the loaded  $Q$  must decrease. That is, assuming lossless components.  $Q = \frac{R_p}{X_p}$  where  $R_p$  = equivalent parallel resistance of  $R_S$  &  $R_L$ .  $X_p$  = either the inductive or capacitive reactance (they are equal at resonance) Eq. 5 illustrates that a decrease in  $R_p$  also decreases the  $Q$  of the resonant circuit and an increase in  $R_p$  increases the circuit  $Q$ . It also illustrates another very important point: the same effect can be obtained by keeping  $R_p$  constant and varying  $X_p$ . Consequently, for a given source and load impedance, the optimum  $Q$  of a resonant circuit is obtained when the inductor is a small value and the capacitor is a large value; in either case,  $X_p$  is decreased. This effect is shown in figs. 11 and 12.

Two possible approaches to designing a resonant circuit with a particular  $Q$  are available: selecting an optimum value of source and load impedance or selecting  $L$  and  $C$  component values which optimize  $Q$ . Often there is no real choice because in many instances the source and load are defined and cannot be varied. When this occurs,  $X_p$  is automatically defined for a given  $Q$  and we usually end up with component values that are impractical at best. Methods of eliminating this problem will be shown.

#### EXAMPLE 1

Design a resonant circuit to operate between a source resistance of 150 ohms and a load resistance of 1000 ohms. The loaded  $Q$  must be equal to 20 at the resonant frequency of 50 MHz. Assume lossless components and no impedance matching.

SOLUTION: The effective parallel resistance across the resonant circuit is 150 ohms in parallel with 1000 ohms, or  $R_p = 130$  ohms.

$$X_p = \frac{R_p}{Q} = \frac{130}{20} = 6.5 \Omega$$

$$\text{AND } X_p = 2\pi fL = \frac{1}{2\pi fC} \quad (\omega L \propto \frac{1}{\omega C})$$

$$\text{Therefore } L = 20.7 \text{ nH}$$

$$C = 489.7 \text{ pF}$$



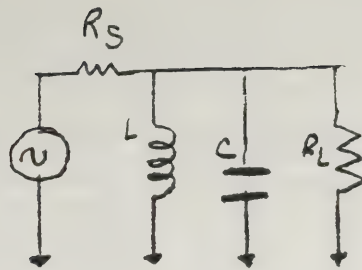


FIG. 8 CIRCUIT FOR LOADED Q CALCULATIONS

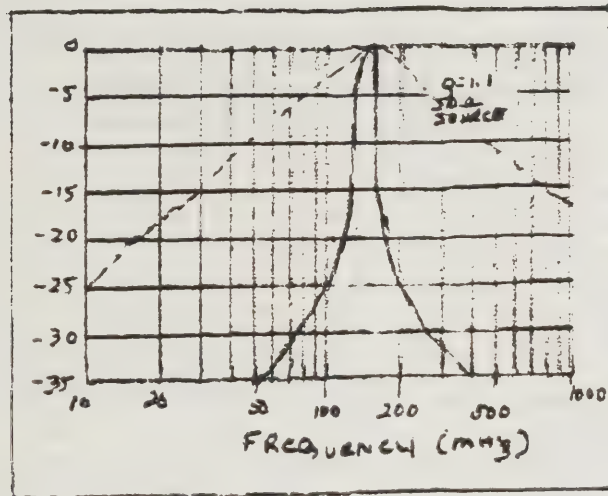
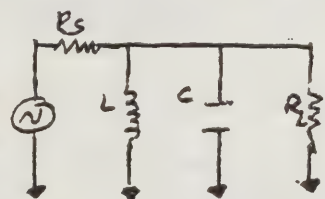
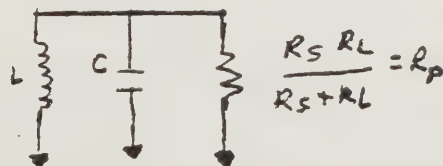


FIG. 9 EFFECT OF  $R_S$  &  $R_L$  ON LOADED Q



P-RESONANT CIRCUIT W/ EXT. LOAD



E-QUIV. CIRCUIT FOR CALCULATIONS

FIG. 10. EQUIV. PARALLEL  $Z$  ACROSS A RESONANT CIRCUIT



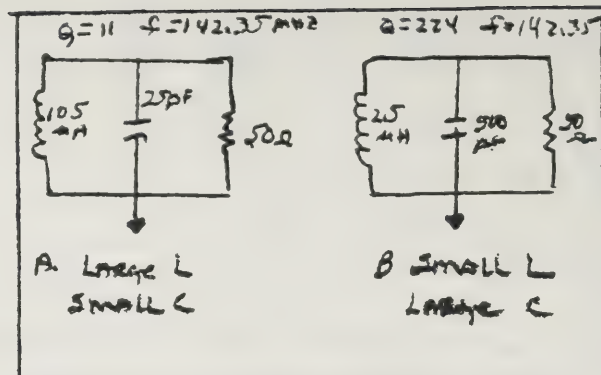


FIG. 11 - EFFECT OF  $Q$  VERSUS  
X AT 142.35 MHz

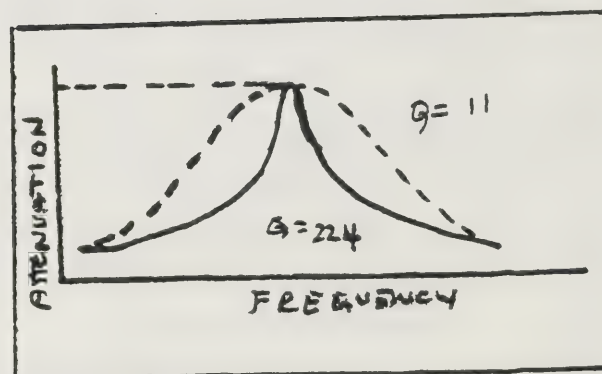


FIG. 12 PLOT of Load  $Q$   
CURVES FOR CIRCUITS  
IN FIG 11.



# CLUB PROJECT

Several months ago, Jeff KROJ expressed interest in seeing the club work together on some type of project, if you haven't heard yet, that time is here...10FM. Up on the top end of the 10Mtr. Band from 29.500 to 29.700 most of the activity is F.M. This is a very easy and inexpensive project. From the days of 11 mtrs. (you know C.B. Chicken Band 10-4

Good Euddy etc.) several of the manufacturers used the same basic board. For about \$30 - \$40 depending on your own artistic feelings, and about a weeks worth of evenings that old 11mtr. AM rig becomes a great 10mtr. FM rig. Also, with a little luck and a lot of prayer, we hope to receive a coordinated frequency for a repeater on 10. The Ohio area repeater council is looking at our proposal for a repeater to be operated on 29.56in 29.66 out, they have given us permission to construct transmit and test on 29.66 temporarily subject to interference. There are only four (4) repeater pairs on 10 FM. and when the band opens up it goes... Seattle, Wash., San Jose, Ca., Virgin Islands on 4 watts out. Barring any problems and favorable action by the repeater council, we hope the repeater will become full-time and operational. For the time being though several members are operating 29.66 simplex or are meeting on 29.60 the simplex calling freq.worldwide. Finding the exact boards that can be converted has been a little hectic but it seems as if we have found a supplier or two. Again depending on yourself and how much \$\$ you want to spend. One supplier has everything from the basic board all the way to a wired and tested rig ready to go. Another supplier has the board, channel switch, FM detector board and parts for under \$20. After several slight high level discussions with the owner of this particular place and a couple of well placed words, I received the boards and they look good and do work, so all is not lost. For more information and/or ordering critique contact Dave N8ETY.

I really do not want to do the ordering for all of the various parts but I will give you all the info I have and help when you start. Keep an ear to the 529 repeater and if you are so equipped to 29.60 or 29.66 you may catch us having a ball.

73 Dave ETY

I have decided to print the names of the suppliers I have found... THIS IS NOT AN OFFICAL ENDORSMENT of either company. Take a look at what each company has to offer and you decide. Contact them for more info.

Morning Distributing  
8481 S. River Dr.  
Miami, Fl. 33166  
305-884-8686  
M.O. or Personal Check

This group sells a 40 Ch. Board, the proper Chip for the PLL, the FM Detector Board, Vol. & Sq. pots. Also sends instructions for conversion. With this board, you still need to order crystals.

Heil Sound, LTD  
Marissa, Il. 62257  
618-295-3000

This is Bob Heil K9EID , Well known for Various projects. Heil carries everything needed for 10 FM, from the basic boards all the way to a complete unit ready to go.

OK, there you have it ---. ---. ---. ---. ---.



QST DE W1AW  
HR ARRL BULLETIN NR4 FROM ARRL HEADQUARTERS  
NEWINGTON CT JANUARY 26, 1985  
TO ALL RADIO AMATEURS

The ARRL Board of Directors met in Hartford, CT on January 24 and 25. Highlights of the actions taken follow.

One of the first orders of business was the approval of the ARRL Budget for 1985. There were several amendments made to the Articles of Association and Bylaws of the League. Among them were a change in the title of General Manager to Executive Vice President. The committee structure of the Board of Directors was also changed so that the standing committees are now the Administration and Finance, Membership Services, Publications, and Volunteer Resources committees. There will also continue to be an Executive Committee.

The following ARRL directors were elected to one-year terms on the Executive Committee: WØFIR, W3ABC, VE3CDM, and W6ZM. K1ZZ resigned from the Office of Secretary, and W1UED was elected in his place. K1ZZ was elected to the Office of Executive Vice President. The following directors were elected to new terms as directors of the ARRL Foundation - K1KI and N2YL. The following were also elected to new terms as Foundation directors - WA1SVY and W6GC.

The ARRL President announced the membership of the Administration and Finance Committee - W9PRN as Chairman, KØTO as Alternate Chairman, and W5CH and K1LLU, and W8RC as Secretary. The Membership Services Committee - W7QGP as Chairman, W5EDZ as Alternate Chairman, K1KI as Secretary, and W6EJJ. Publications Committee - W4RH as Chairman, W4UG as Alternate Chairman, WA6WZO, and KØGA as Secretary. Volunteer Resources Committee - W4OYI as Chairman, KØPGM as Alternate Chairman, N2YL and N5TC as Secretary.

The Board approved a revised 23 cm band plan submitted to the Board by the VUAC and VRAC. Adjustments were made in the ARRL 33 cm band plan with respect to Canadian amateurs. A policy was adopted to pursue acquiring authority for ARRL to assist FCC in area of call sign issuance. Advisory Committee structure will be studied, and in the interim each will be budgeted up to 500 dollars. Changes were made with regard to the field organization appointment dealing with RFI. All resources available are to be mobilized to release the 24 MHz band for U.S. amateur use. The Board will share the results of the 40 meter phone band survey as of the count on April 1, 1985. Membership input will be sought regarding the possible modification of the ARRL band plan for 160 meters.

QSL Bureaus were commended. The VUAC is tasked to reexamine the ARRL band plan for 420 - 450 MHz. The study of DXCC country status criteria is to continue. The DXAC was directed to reconsider the possible DXCC country status of 4U1VIC taking into account a recent U.S. State Department communication that the U.S. is about to enter into a third party agreement with the Vienna International Center. There is to be a study of whether to adopt a policy to pay authors of articles printed in League publications, particularly QST. There will be a study of the feasibility of a station appointment for the purpose of administering some ARRL awards. A nominal fee for DXCC membership pins has been authorized.

The complete minutes will appear in QST.



### NORTH COAST FIELD-DAY 1985

SHIRLEY LANTZ, KA8Y REPORTS THAT A NEW NORTH COAST FIELD-DAY SITE IS CLOSE TO BEING CONFIRMED.

SHIRLEY WILL BE COORDINATING FURTHER VERY SOON WITH OUR FIELD-DAY COMMITTEE FOR ADDITIONAL PLANNING OF THE SITE.

THIS YEARS NORTH COAST FIELD-DAY LOOKS AS IF IT WILL BE THE BEST YET.

YOU WILL BE KEPT ADVISED OF MORE FIELD-DAY INFORMATION IN UPCOMING MEETINGS, SUNDAY 9 PM INFORMAL NETS, AND FUTURE COMMUNICATOR ISSUES.

### AMATEUR RADIO CODE AND THEORY CLASSES

THERE MAY STILL BE TIME LEFT TO BE ENROLLED INTO THE NOVICE THRU EXTRA CLASSES LOCATED AT VALLEY FORGE HIGH SCHOOL, PARMA, OHIO

CLASSES ARE TUESDAY EVENINGS AT 7:00 AND START JANUARY 29, 1985.

FOR MORE INFORMATION, CONTACT: FRED ENGELMAN, WB8UBS AT 524-1995.

A SPECIAL NOTE FOR BOY SCOUTS - THE TEN DOLLAR REGISTRATION FEE IS RETURNED BACK TO ANY NON-AMATEUR BOY SCOUT (18 YEARS OLD OR YOUNGER) WHO COMPLETES THE COURSE AND GETS AN AMATEUR RADIO LICENSE.

### NORTH COAST SUNDAY NIGHT INFORMAL NET 9:00 PM ON OUR 145.29 REPEATER

FOUR STATIONS WILL NOW ROTATE AS NET CONTROL ALL SHARING IN THE RESPONSIBILITY OF MAINTAINING SMOOTH OPERATIONS ON THE NORTH COAST NET.

DAVE, N8ETY - GLENN, WD8OMW - TOM, KD8EX - JEFF, KR0J

PLEASE GIVE YOUR SUPPORT TO OUR NET CONTROLS AND CHECK IN OFTEN.

DON'T FORGET THAT THIS NET CONTAINS A LOT OF INFORMATION, INCLUDING THE VOICE REPORTS FROM WESTLINK, A.R.R.L. BULLETINS, ETC..

### NORTH COAST A.R.C. CODE PRACTICE 8:00 PM SUNDAYS

IN CASE YOU AREN'T AWARE OF IT (OR HAVE A FRIEND THAT IS LOOKING FOR MORSE CODE PRACTICE), NORTH COAST HAS BEEN OPERATING CODE PRACTICE EVERY SUNDAY NIGHT AT 8 PM. SPEEDS ARE 6, 9, 13, 16, 20 AND 24 WPM.

### HAPPY NEW YEAR

WE SINCERELY THANK ALL OF YOU FOR YOUR SUPPORT DURING 1984, AND WE WISH YOU THE VERY BEST IN 1985.

NORTH COAST A.R.C.



NORTH COAST MEMBERSHIP REVENUES VS. CLUB EXPENSES

MEMBERSHIP REVENUES (TOTAL MEMBERSHIP NOW AT 88)

REGULAR MEMBERSHIP (\$12.00) TIMES 83 = \$ 996.00  
ADDL FAMILY MEMBERS (\$ 6.00) TIMES 5 = 30.00  
\$1026.00

NORTH COAST COMMUNICATOR

.37 X 6 ISSUES =\$ 2.22 (MAILING COST OF COMMUNICATOR)  
(MAILING COST IS RISING BECAUSE OF POSTAL INCREASES)  
.08 X 8 PAGES X 6 = 3.84 (PRINTING COST OF COMMUNICATOR)  
(VARIES) \$ 6.06 ESTIMATE YEARLY COST PER REG. MEMBER  
\$6.06 TIMES 83 REG MEMBERS = \$ 502.98

OTHER CLUB EXPENSES

TELEPHONE COST (REPEATER AUTOPATCH/WESTLINK)  
\$34.00 X 12 = \$408.00  
WESTLINK SUPPORT DONATION - - - - - 50.00  
COFFEE AND DONUTS FOR MEETINGS - - - 60.00  
\$518.00

MEMBERSHIP \$1026.00 LESS \$1020.98 (\$502.98 + \$518.00) LEAVES \$5.02.

TO SUPPORT CLUB FIELD-DAY ACTIVITIES, CLEVELAND HAMFEST COSTS, REPEATER REPAIR & UPDATE (IF ANY), AND OTHER ACTIVITIES AND EXPENSES, THE CLUB MUST HAVE OTHER SOURCES OF INCOME, SUCH AS; 50/50 DRAWINGS AT MEETINGS, RAFFLE DRAWINGS (DURING CLEVELAND HAMFEST), COFFEE/DONUT DONATION CUP AT MEETINGS, ETC..

TWO AREAS WOULD IMPROVE NORTH COAST'S FINANCIAL SITUATION GREATLY:

1. NON-PROFIT STATUS  
THIS WOULD REDUCE OUR MAILING COST GREATLY.
2. MORE MEMBERS  
EACH NEW MEMBER OR FAMILY MEMBER WOULD OFFSET ABOUT \$6.00 OF THE CLUB'S COST.

SPECIAL DX STATION WITH A DIFFERENCE (FROM WESTLINK #682)

PA6FLD WILL BE OPERATING FROM 0600 UTC FEB 16 THRU 1800 UTC FEB 17TH.

THIS SPECIAL PREFIX HAS BEEN ISSUED BY THE NETHERLANDS PTT (HOLLAND) FOR A SPECIAL AMATEUR RADIO OPERATION WHICH WILL USE THE NEW ANTENNA FACILITIES AT FLEVOLAND FOR RADIO NETHERLAND. THIS OPERATION WILL USE STANDARD AMATEUR RADIO GEAR ON SHORTWAVE BROADCAST ANTENNA FACILITIES THAT HAVE UP TO 20 DB OF GAIN (GIANT CURTAIN ARRAYS).

LOOK FOR THE REAL BIG SIGNAL FROM PA6FLD,

GOOD LUCK



## UPCOMING HAMFEST / EVENTS

- FEB 3, LORAIN, NOARS WINTERFEST, 8 AM THRU 4 PM  
GARGUS HALL (RT 254 JUST WEST OF RT 57), TALK-IN 146.10/70.
- FEB 3, N.C.A.R.C. BOARD MEETING, 4 PM AT WD8OMW'S NEW QTH.
- FEB 7, N.C.A.R.C. GENERAL MEETING, 7:30 PM NORTH OLMSTED
- FEB 9, N.C.A.R.C. SCOUT EXPO AMATEUR RADIO DEMO, GREAT NORTHERN
- FEB 10 MANSFIELD MID-WINTER HAMFEST 8 AM THRU 5 PM  
RICHLAND COUNTY FAIRGROUNDS (HOME RD, TAKE US 30 WEST FM I-71)  
TALK-IN ON 146.34/94 (MANSFIELD, OHIO).
- FEB 19 CLEVELAND HAMFEST ASSOC MEETING, 7:30 (6:30 DINNER)
- FEB 22-24 CINCINNATI ARRL 85 OHIO STATE CONVENTION  
SPONSORED BY: COMMITTEE FOR AMATEUR RADIO  
P O BOX 11300, CINCINNATI, OH 45211
- FRI - (HOSPITALITY SUITE) RADISSON INN 8:30 PM
- SAT - EXHIBITS AND FLEA MARKETS, PROGRAMS 9 AM THRU 5 PM  
BANQUET AT RADISSON INN AT 7 PM
- SUN - EXHIBITS AND FLEA MARKETS, PROGRAMS 9 AM THRU 5 PM
- FEB 24 LIVONIA, MICHIGAN (NEAR DETROIT) 8 AM THRU 4 PM  
15TH ANNUAL SWAP'N SHOP AT CHURCHILL HIGH SCHOOL
- FEB 24 AKRON, OH - CUYAHOGA FALLS ARC, 8 AM THRU 3 PM  
31ST ANNUAL ELECTRONIC EQUIPMENT AUCTION AND HAMFEST AT  
NORTH HIGH SCHOOL - ROUTE 8 NORTH EXPRESSWAY TO TALLMADGE AVE  
TALK-IN ON 147.87/27
- MAR 3, CIRCLEVILLE, OH - TEAYS ARC 7TH ANNUAL HAMFEST AT K.C. LODGE  
TWO MILES NORTH OF CIRCLEVILLE ON CO RD 511. TALK-IN 147.78/18
- MAR 16 TOLEDO - 1ST ANNUAL LUCAS COUNTY ARES BENEFIT BANQUET  
SCOTT PARK BANQUET HALL (RESERVATION MUST BE PLACED BY MARCH 1.  
\$12.50 PER PERSON, \$25.00 PER COUPLE.
- MAR 17 TOLEDO - 30TH ANNUAL HAM/COMPUTER FEST AND AUCTION SPONSORED BY  
THE TOLEDO MOBILE RADIO ASSN., INC. 8 AM THRU 5 PM AT THE LUCAS  
COUNTY REC CENTER IN MAUMEE. TURNPIKE TO EXIT 4, TALK-IN ON  
146.01/61, 146.19/79, 146.34/94, 147.87/27, 147.975/375 AND 52.
- APR 4, N.C.A.R.C. GENERAL MEETING, 7:30 PM NORTH OLMSTED
- APR 13 OHIO AREA REPEATER COUNCIL MEETING, 9:30 AM COLUMBUS, OHIO

## CONGRATULATIONS TO JAY (WD8PBQ) AND MARY REZABEK

JAY'S WIFE (MARY) GAVE BIRTH TO A 6 LB 2 OZ LB BABY BOY AT 7:05 PM ON  
JANUARY 24TH. BOTH MARY AND THEIR NEWBORN ARE BOTH DOING JUST FINE.  
JAY AND MARY HAVE NOW BALANCED THEIR HARMONICS AT 2 BOYS AND 2 GIRLS.

## NORTH COAST WELCOMES THE FOLLOWING NEW/RENEWED MEMBERS

CHARLIE COOK	-	N8BO	
STEVE FERRARO JR	-	WD8INO	
LARRY STACIK	-	W8KGA	
JIM MALONE	-	W8PEV	
GEORGE BRINGHURST	-	KD8QY	
BOB MORGAN	-	K8RBV	(RENEWED)
KEN KORBER	-	KA8TWK	
JIM BAIRD	-	KB8ZA	





NORTH COAST DEPARTMENTS / COMMITTEES

\* DENOTES CHAIR-PERSON

1. REPEATER TECHNICAL	- * RICK WELLS K8SCI	779-8999
	- DAVE KIFER N8ETY	459-0676
	- TOM KAPSAR KV8M	238-6150
	- GLENN CHRISTMAN WD8OMW	661-3656
	- DICK STUART KD8EQ	235-2323
2. NORTH COAST COMMUNICATOR	- * DAVE KIFER N8ETY	459-0676
	- GLENN CHRISTMAN WD8OMW	661-3656
	- RICK WELLS K8SCI	779-8999
	- DAVE CURRY KB8TT	942-5030
	- TOM KOPCAK N8ETP	871-6181
	- DICK STUART KD8EQ	235-2323
3. FIELD-DAY	- * SHIRLEY LANTZ KA8Y	662-4307
	- TOM KAPSAR KV8M	238-6150
	- RAY BECKER KA8BPU	842-7647
	- TOM RUDMAN KD8EX	1-933-8753
	- TOM ADAMS N8FQQ	885-1104
	- DAN HARLAN N8ETQ	845-5442
	- DAN SARAMA KB8A	UNLISTED
4. MEETING PROGRAMS	- JEFF VECBASTIKS KR0J	631-8433
5. TECHNICAL	- DICK STUART KD8EQ	235-2323
6. INFORMAL NET	- * DAVE KIFER N8ETY	459-0676
	- GLENN CHRISTMANN WD8OMW	661-3656
	- TOM RUDMAN KD8EX	1-933-8753
	- JEFF VECBASTIKS KR0J	631-8433
7. CODE-PRACTICE	- RICK WELLS K8SCI	779-8999
8. SUN-SHINE	- TOM KOPCAK N8ETP	871-6181
9. ARRL BULLETINS	- TOM KAPSAR KV8M	238-6150
10. WESTLINK REPORTS	- RICK WELLS K8SCI	779-8999
11. SPACE COMMUNICATIONS	- DAVE KIFER N8ETY	459-0676
12. MEMBERSHIP	- GLENN CHRISTMAN WD8OMW	843-8951
13. THE N8ETP REPORT	- TOM KOPCAK N8ETP	871-6181
14. VOLUNTEER EXAMINATIONS (BEING STARTED)	- * SHIRLEY LANTZ KA8Y	662-4307
	- PETE HARMON W1BKZ	951-9360
	- DAN SAMARA KB8A	UNLISTED
	- CLYDE LORENZ WB8YNX	1-836-1128
15. PUBLIC SERVICE ACTIVITIES-	- RICK WELLS K8SCI	779-8999

WESTLINK SUPPORT FUND

THE WESTLINK ORGANIZATION WHICH PRODUCES THE WESTLINK REPORT HEARD ON OUR 9 PM SUNDAY NIGHT INFORMAL NET (145.290 MHZ) IS FINANCIALLY SUPPORTED BY VOLUNTEER DONATIONS ONLY.

THEY HAVE EXPRESSED A FURTHER NEED FOR ADDITIONAL SUPPORT. IF YOU ARE INTERESTED IN SENDING A FINANCIAL DONATION TO WESTLINK, PLEASE SEND YOUR DONATION (MADE OUT TO WESTLINK INC) TO:

WESTLINK, INC C/O NORM CHELTON K6PGX  
P O BOX 463, PASADENA, CALIF 91102

PLEASE MENTION THAT YOU LISTEN TO THE WESTLINK REPORTS ON THE NORTH COAST AMATEUR RADIO CLUB'S 145.290 REPEATER (K8SCI) NEAR CLEVELAND, OHIO DURING THE CLUB'S 9 PM SUNDAY NIGHT INFORMAL NET.



JANUARY 31, 1985

NORTH COAST AMATEUR RADIO CLUB - MINI ROSTER

<u>CALL</u>	<u>NAME</u>	<u>CALL</u>	<u>NAME</u>	<u>CALL</u>	<u>NAME</u>
KB8-A	DAN	KD8-EX	TOM	WB8-NXT	NEIL
N8-API	GEORGE	N8-EYG	SCOTT	WB8-OGN	JACK
K8-ATQ	ROL	W8-FAZ	JOE	WD8-OMW	GLENN
N8-ATV	JERRY	N8-FCQ	CASEY	WD8-PBQ	JAY
W1-BBW	SHELLY	N8-FCX	RON	W8-PEV	JIM
N8-BFH	CHERYL	N8-FDY	TOM	K8-PPZ	TOM
KA8-BJA	FRANK	N8-FEG	PETE	WD8-QAC	AL
W1-BKZ	PETE	N8-FGR	WAYNE	K8-QNK	DICK
N8-BO	CHARLIE	N8-FKT	BOB	KD8-QY	GEORGE
KA8-BPU	RAY	KA8-FOE	PAULINE	K8-RBV	BOB
N8-BTB	STEVE	N8-FQQ	TOM	WB8-RGK	TIM
K8-BVI	ART	W8-GNB	EDDIE	K8-RSH	CHUCK
N8-BYW	BUD	W3-IGI	BILL	K8-SCI	RICK
W8-CEJ	MEL	WB8-IKO	STEVE	WD8-SDP	LIN
N8-CKV	PAUL	KA8-IMU	TONY	WA8-SNI	CHARLIE
KA8-CKZ	BILL	WB8-INM	DAVE	KA8-SNM	CHERI
K8-DDY	BILL	WD8-INO	STEVE	K9-SSL	MIKE
N8-DMK	RUSS	WD8-IQO	MILT	K8-TKQ	HOWARD
K8-DPA	AL	WD8-IRG	VAN	KB8-TT	DAVE
K8-DTS	BOB	KR0-J	JEFF	K8-TTZ	BOB
N8-DZO	JACK	N6-JAM	RON	KA8-TWK	KEN
W8-EFW	PAUL	KD8-JQ	DON	KA8-VIC	TIM
KD8-EQ	DICK	W8-KGA	LARRY	W8-WXR	ROGER
N8-ERA	ED	WD8-KHU	MARK	W8-WYK	MAS
WA8-ERA	LEE	WD8-KTC	MARIE	AK8-Y	MIKE
N8-ETP	TOM	KA8-LIH	KAREN	KA8-Y	SHIRLEY
N8-ETQ	DAN	KV8-M	TOM	WB8-YNX	CLYDE
N8-ETW	ERNIE	WA8-MYX	HAL	NB8-Z	LARRY
N8-ETY	DAVE			KB8-ZA	JIM
N8-ETZ	MARY			WB8-ZQH	DAN

## How To Repair An Electronic Instrument

### Step 1.

Approach the ailing instrument in a confident manner. This will give the instrument the mistaken idea that you know something. It will also impress anyone who happens to be looking, and if the instrument should suddenly start working, you will be credited with its repair. If this step fails to work, proceed to Step 2.

### Step 2.

Wave the service manual at the instrument. This will make it assume that you are at least familiar with the source of knowledge. Should this step fail to work, proceed to Step 3.

### Step 3.

In a forcible manner, recite Ohm's Law to the instrument (caution: before taking this step, refer to some reliable handbook to be sure of your knowledge of Ohm's Law). This will prove to the instrument, beyond the shadow of a doubt, that you know something. This is a drastic step and should be attempted only if the first two fail. If this step fails to work, proceed to Step 4.

### Step 4.

Jar the instrument slightly. This may require anything from a three to six foot drop, preferably on a concrete floor. However, you must be careful with this step because, while jarring is an approved method of repair, you must not mar the floor. Again, this is a very drastic step. If it fails proceed to Step 5.

### Step 5.

Brandish a large screwdriver in a menacing manner. This will frighten the instrument and demonstrate your knowledge of the deadly "short circuit" technique. Proceed to Step 6.

### Step 6.

Add a tube . . . even if the instrument is solid state. This will prove that you are familiar with the instrument's design. This will confuse the instrument and thereby increase your advantage. If this doesn't work, proceed to the most drastic and dangerous step. It is seldom needed and is a final resort if all else fails!

### Step 7.

THINK . . . !



NORTH COAST A.R.C.  
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